



NATIONAL DEFENSE RESEARCH INSTITUTE

CHILDREN AND FAMILIES
EDUCATION AND THE ARTS
ENERGY AND ENVIRONMENT
HEALTH AND HEALTH CARE
INFRASTRUCTURE AND
TRANSPORTATION
INTERNATIONAL AFFAIRS
LAW AND BUSINESS
NATIONAL SECURITY
POPULATION AND AGING
PUBLIC SAFETY
SCIENCE AND TECHNOLOGY
TERRORISM AND
HOMELAND SECURITY

The RAND Corporation is a nonprofit institution that helps improve policy and decisionmaking through research and analysis.

This electronic document was made available from www.rand.org as a public service of the RAND Corporation.

Skip all front matter: [Jump to Page 1](#) ▼

Support RAND

[Browse Reports & Bookstore](#)

[Make a charitable contribution](#)

For More Information

Visit RAND at www.rand.org

Explore [RAND National Defense Research Institute](#)

View [document details](#)

Limited Electronic Distribution Rights

This document and trademark(s) contained herein are protected by law as indicated in a notice appearing later in this work. This electronic representation of RAND intellectual property is provided for non-commercial use only. Unauthorized posting of RAND electronic documents to a non-RAND website is prohibited. RAND electronic documents are protected under copyright law. Permission is required from RAND to reproduce, or reuse in another form, any of our research documents for commercial use. For information on reprint and linking permissions, please see [RAND Permissions](#).

Report Documentation Page				Form Approved OMB No. 0704-0188	
Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.					
1. REPORT DATE 2012		2. REPORT TYPE		3. DATES COVERED 00-00-2012 to 00-00-2012	
4. TITLE AND SUBTITLE Compensation for Combat Deaths: Policy Considerations				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) RAND Corporation, National Defense Research Institute, 1776 Main Street, P.O. Box 2138, Santa Monica, CA, 90407-2138				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution unlimited					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT Same as Report (SAR)	18. NUMBER OF PAGES 42	19a. NAME OF RESPONSIBLE PERSON
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified			

This product is part of the RAND Corporation documented briefing series. RAND documented briefings are based on research briefed to a client, sponsor, or targeted audience and provide additional information on a specific topic. Although documented briefings have been peer reviewed, they are not expected to be comprehensive and may present preliminary findings.

Compensation for Combat Deaths

Policy Considerations

Paul Heaton, James N. Dertouzos,
James M. Anderson, John Mendeloff

Prepared for the Office of the Secretary of Defense

Approved for public release; distribution unlimited



The research described in this report was prepared for the Office of the Secretary of Defense (OSD). The research was conducted within the RAND National Defense Research Institute, a federally funded research and development center sponsored by OSD, the Joint Staff, the Unified Combatant Commands, the Navy, the Marine Corps, the defense agencies, and the defense Intelligence Community under Contract W74V8H-06-C-0002.

The RAND Corporation is a nonprofit institution that helps improve policy and decisionmaking through research and analysis. RAND's publications do not necessarily reflect the opinions of its research clients and sponsors.

RAND® is a registered trademark.

© Copyright 2012 RAND Corporation

Permission is given to duplicate this document for personal use only, as long as it is unaltered and complete. Copies may not be duplicated for commercial purposes. Unauthorized posting of RAND documents to a non-RAND website is prohibited. RAND documents are protected under copyright law. For information on reprint and linking permissions, please visit the RAND permissions page (<http://www.rand.org/publications/permissions.html>).

Published 2012 by the RAND Corporation
1776 Main Street, P.O. Box 2138, Santa Monica, CA 90407-2138
1200 South Hayes Street, Arlington, VA 22202-5050
4570 Fifth Avenue, Suite 600, Pittsburgh, PA 15213-2665
RAND URL: <http://www.rand.org>
To order RAND documents or to obtain additional information, contact
Distribution Services: Telephone: (310) 451-7002;
Fax: (310) 451-6915; Email: order@rand.org

Preface

This briefing summarizes a project jointly conducted within the RAND Institute for Civil Justice (ICJ) and the RAND National Defense Research Institute (NDRI). The goal of the project was to identify emerging policy questions related to compensation for U.S. military combat deaths and suggest opportunities for further research. The project drew on past research and expertise developed in ICJ in the areas of insurance, risk, and injury compensation and on NDRI's broad portfolio of research on military manpower issues, including incentives, recruiting, and compensation. It should be of particular value to policymakers and researchers interested in issues related to compensation for military personnel.

The mission of ICJ is to improve private and public decisionmaking on civil legal issues by supplying policymakers and the public with the results of objective, empirically based, analytic research. ICJ facilitates change in the civil justice system by analyzing trends and outcomes, identifying and evaluating policy options, and bringing together representatives of different interests to debate alternative solutions to policy problems. ICJ builds on a long tradition of RAND research characterized by an interdisciplinary, empirical approach to public policy issues and rigorous standards of quality, objectivity, and independence. Information about ICJ is available online (<http://www.rand.org/icj/>).

This research was conducted within the Forces and Resources Policy Center of NDRI, a federally funded research and development center sponsored by the Office of the Secretary of Defense, the Joint Staff, the Unified Combatant Commands, the Navy, the Marine Corps, the defense agencies, and the defense Intelligence Community. For more information on the Forces and Resources Policy Center, see <http://www.rand.org/nsrd/ndri/centers/frp.html> or contact the director (contact information is provided on the web page).

Table of Contents

Preface.....	iii
Summary.....	vii
Acknowledgments	ix
Compensation for Combat Deaths: Policy Considerations	1
References	29

Summary

This briefing summarizes a project performed by researchers at the RAND Institute for Civil Justice (ICJ) and the RAND National Defense Research Institute (NDRI). The goal of the project was to identify emerging policy questions related to compensation for U.S. military combat deaths and suggest opportunities for further research.

The question of how to compensate combat fatalities remains an important one: In recent years, the number of U.S. combat casualties has exceeded the number of commercial airline fatalities and the number of line-of-duty police deaths, and fatality rates for many military occupations are appreciably above those of even the riskiest civilian occupations. Combat casualties tend to be younger and have fewer dependents than fatalities occurring in many other contexts, patterns that may have implications for the desired compensation structure.

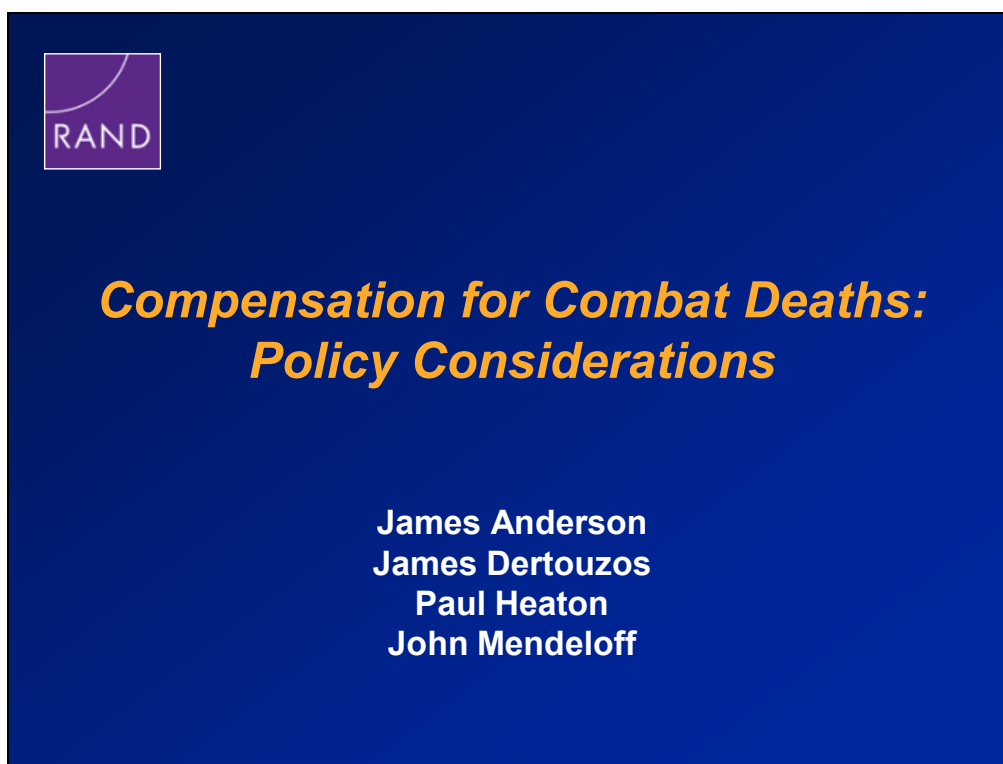
Existing Department of Defense (DoD) programs provide combat risk compensation in a variety of forms. Some forms of compensation, such as bonuses or hazardous duty pay, are *ex ante* in nature and are provided to a wide range of service members, whereas other programs, such as DoD's Death Gratuity, are provided *ex post* only to survivors of those who have been killed in combat. DoD also provides a mix of both cash and in-kind compensation to families of those who have died in combat.

In considering the best way to structure compensation, DoD must confront a range of policy questions related to when, how, and how much service members and their families should be compensated for risk of combat death and its realization. Existing and potential future compensation systems can be assessed against a variety of goals, including social, national security, and efficiency criteria. There are also a range of additional initiatives and federal programs designed to provide compensation for premature death in other settings, such as the 9/11 Victims' Compensation Fund and the Federal Employees Compensation Act, and examining how compensation is handled in these programs may provide useful lessons for DoD.

Acknowledgments

The authors express appreciation to Beth Asch, Sue Hosek, Lloyd Dixon, Steve Garber, and members of the ICJ Board of Overseers who provided helpful comments on this research.

Compensation for Combat Deaths: Policy Considerations



This briefing summarizes a project performed by researchers at the RAND Institute for Civil Justice (ICJ) and the RAND National Defense Research Institute (NDRI). The goal of the project was to identify emerging policy questions related to compensation for U.S. military combat deaths and suggest opportunities for further research. The project drew on past research and expertise developed in ICJ in the areas of insurance, risk, and injury compensation and on NDRI's broad portfolio of research on military manpower issues, including incentives, recruiting, and compensation.

Slide 1



Road Map

- **Background on combat casualties**
- **Current compensation programs**
- **Outstanding questions and opportunities for future progress**

RAND

A8812d-2 03/10

The briefing is divided into three sections.

Drawing from a variety of data sources, we first provide data on the number and characteristics of recent combat casualties. These data provide an indication of the scope of the compensation issue faced by policymakers.

We next turn to a description of existing compensation programs for combat death and briefly consider some ways in which these programs compare to compensation schemes devised for other types of accidental or premature death.

Finally, in light of current patterns of combat death and existing programs, we identify a number of outstanding questions that must be addressed in order to develop a coherent set of policies for compensating combat deaths.

Slide 2

Historically, Compensation for Combat Deaths Has Drawn Policy Attention

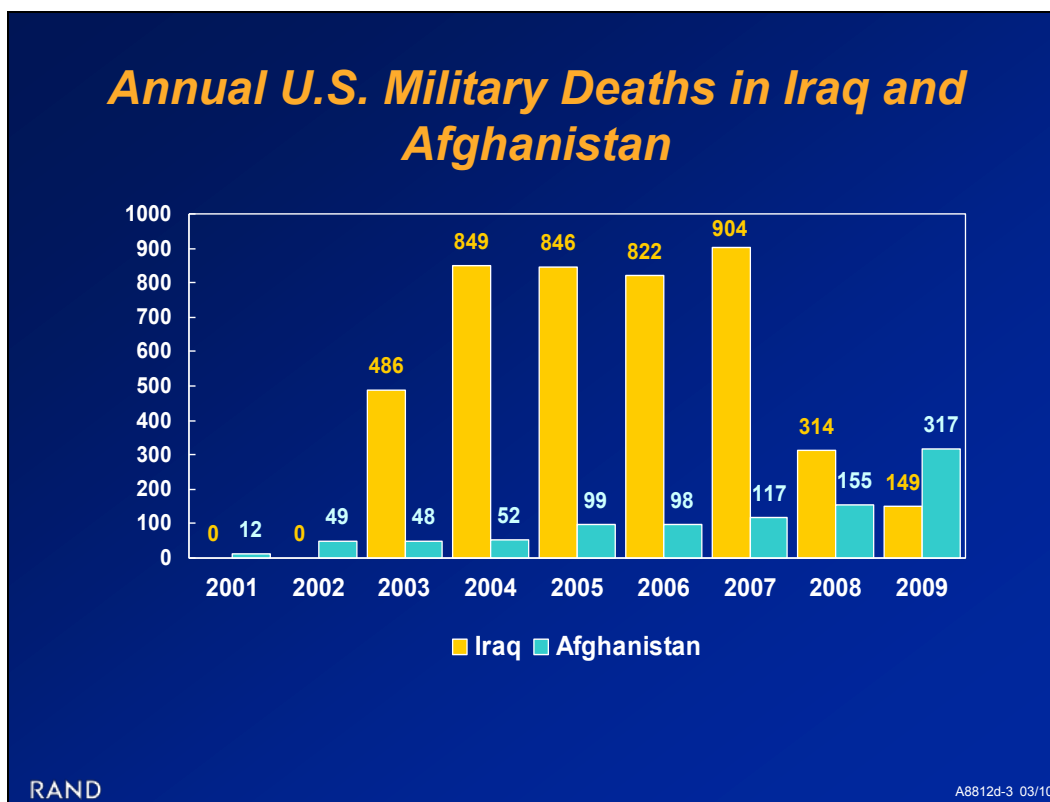
- Civil war veterans (Union) received generous pension benefits that were also provided to surviving dependents
- World War Adjusted Compensation Act of 1924 offered deferred payments to veterans and war widows
 - Discontent over deferral led to “Bonus March” of 1932
- This briefing highlights policy issues related to current dependent benefits
 - Builds on ICJ work on compensation in various settings
 - Leverages RAND’s military manpower expertise

RAND

A8812d-2 03/10

The problem of devising equitable and efficient programs for providing compensation for service-related death is not a new one (Costa, 1995; Ortiz, 2006). However, in recent years, the research community has made advances in a number of areas relevant to compensation policy. For example, a range of new research studies by psychologists and economists provide novel insights regarding how individuals incorporate risky possibilities into their individual decisionmaking, and thereby reveal through their behavior their willingness to accept money to bear or avoid risk. New initiatives designed to address emergent issues in mass casualty compensation, such as the 9/11 Victims’ Compensation Fund, have furnished lessons that may be applicable to DoD compensation programs. In the discussion that follows, we enumerate outstanding policy questions related to compensation for military fatalities and identify areas where additional insights from modern research may be helpful to DoD as it seeks to optimize its compensation policy.

Slide 3



So long as combat deployments overseas continue, DoD will continue to face policy questions relating to its system for compensating for combat fatalities. These data, taken from iCasualties.org (2010a and 2010b), demonstrate that the number of deaths in Iraq has fallen in recent years, while the number of deaths in Afghanistan has risen somewhat. Although overall annual fatalities have diminished over time, casualties remain frequent enough to warrant significant attention from the public and policymakers.

This chart and the subsequent discussion focus on compensation for combat death. An important set of issues not addressed in this project is issues related to compensation for other adverse effects of combat, including physical and psychological injury, and compensation for noncombat death. Although consideration of these areas is beyond the scope of the present project, because injuries and fatalities and combat and non-combat fatalities are sometimes handled within the same compensation program (as in the case of Servicemembers General Life Insurance program [SGLI], a single insurance program that provides payments for both severe injury or death), policymakers should consider potential linkages across the programs for compensating various types of injuries.

Slide 4

Military Fatalities Pose a Significant Compensation Issue

Annual U.S. combat deaths in OIF/OEF, 2001-2009 average	465
Annual U.S. commercial airline fatalities, 1990-2009 average	75
Annual police officers killed in the line of duty, 1999-2009 average	116
Mesothelioma deaths, 2004	2,656
9/11 victims	2,976
Total U.S. occupational fatalities, 2008	5,071
U.S. homicide victims, 2008	16,272
U.S. auto crash fatalities, 2008	37,261

RAND

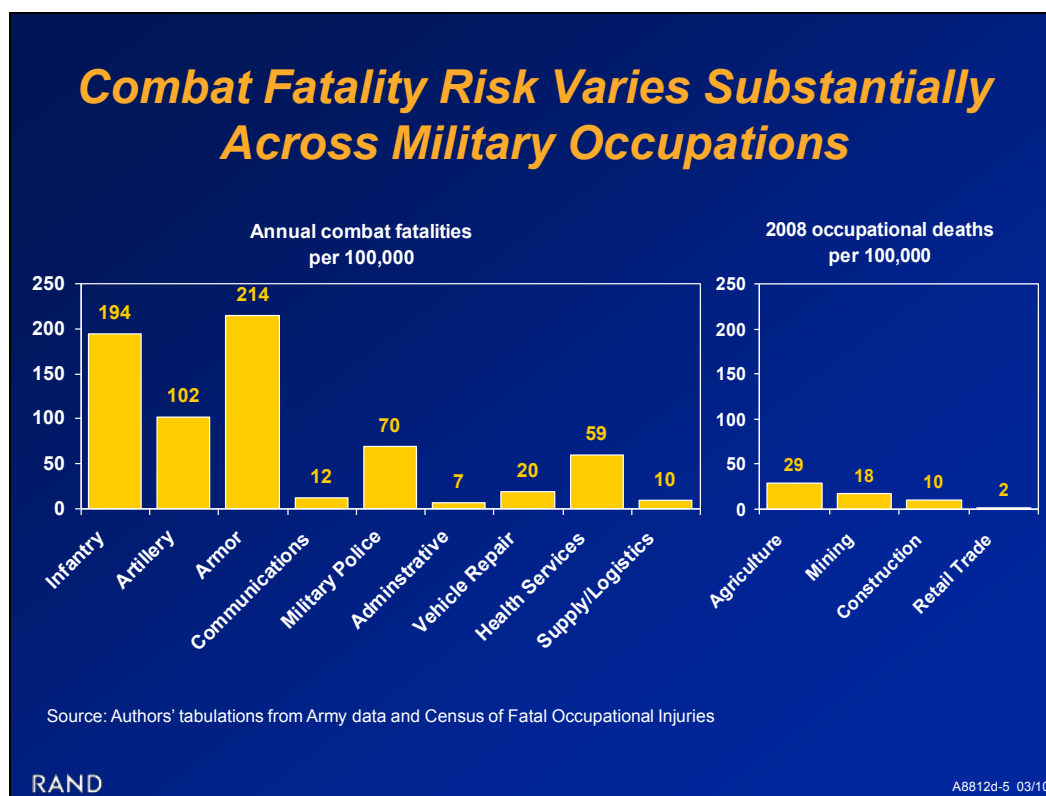
A8812d-4 03/10

In thinking about the significance of the problem of providing compensation for U.S. combat deaths, it is useful to place these deaths in a larger context. Combat deaths in Iraq and Afghanistan have exceeded total U.S. deaths from the 9/11 terrorist attacks, line-of-service police deaths between 1999 and 2009, and airline fatalities between 1990 and 2009. Over 2001–2009, combat casualties were about one-twelfth as numerous as the sum of occupational fatalities across other U.S. industries over the same period.

As discussed below, a variety of private and public mechanisms have been developed to provide compensation in these other settings. In some cases, compensation is handled through specialized funding facilities that function outside of the tort system—for example, workers' compensation programs for workplace fatalities and the Victims' Compensation Fund established following 9/11. In other cases, as for auto accidents, private insurance markets have developed. For certain types of deaths, such as criminal victimizations and deaths caused by environmental exposures, such as asbestos, compensation is largely apportioned through the civil justice system. The fact that there are a variety of models for providing compensation in situations involving substantial loss of life suggests that the military may be able to derive lessons for compensating combat fatalities by considering practices that exist in these other domains.

Sources for injury statistics: Combat deaths, iCasualties.org (2010a and 2010b); airline fatalities, National Transportation Safety Board (undated); police deaths, Federal Bureau of Investigation (2009); mesothelioma deaths, Centers for Disease Control and Prevention (2009); 9/11 victims, Dixon and Stern (2004); occupational fatalities, Bureau of Labor Statistics (2010); homicide victims, Federal Bureau of Investigation (2009); auto fatalities, National Highway Traffic Safety Administration (2010).

Slide 5



One issue that may impact the thinking of military policymakers in designing compensation programs for combat death is the fact that exposure to the hazards of combat is not shared equally across military occupations. Research in the civilian context has noted substantial variation across occupations in workplace fatality risk. Substantial variation is also observed when looking across occupational categories in the military. The chart plots the annual combat fatality rate per 100,000 by occupation for Army personnel who enlisted between fiscal year (FY) 2000 and FY 2005. As a comparison, in the right panel of the figure, occupational fatality rates across several representative U.S. industries are reported; these are taken from the 2008 data from the Census of Fatal Occupational Injuries (Bureau of Labor Statistics, 2010).

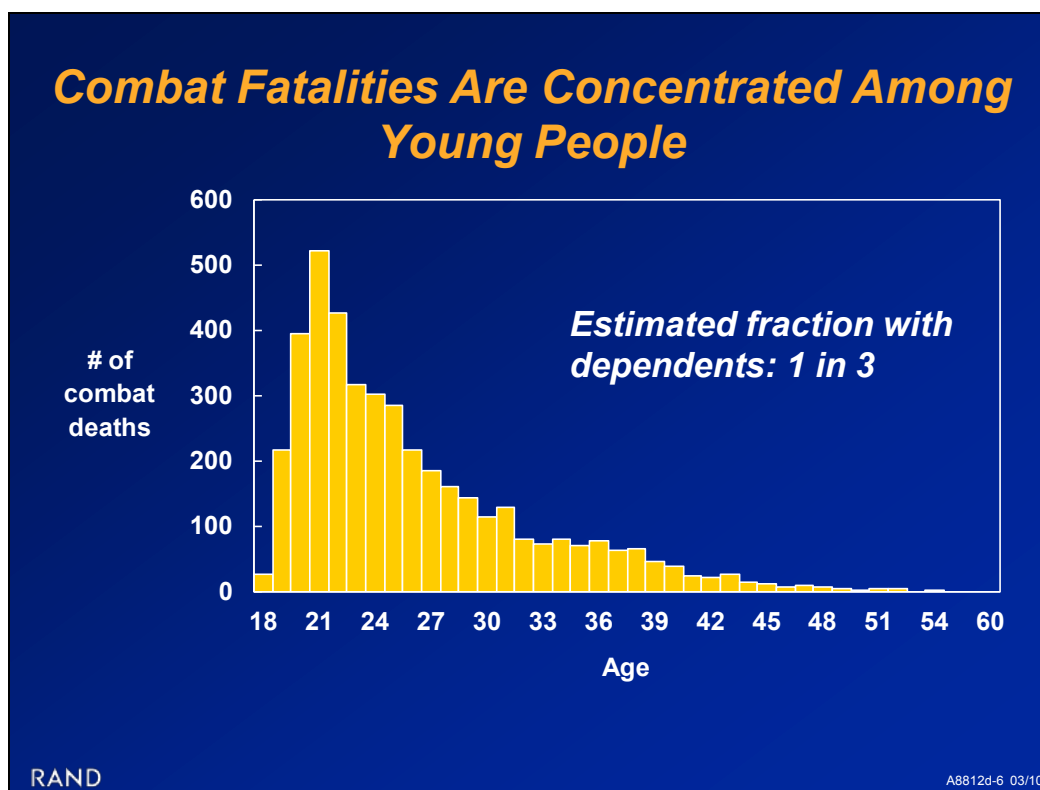
As one might expect, combat fatality rates are highest among ground combat personnel, in particularly infantry, armor, and artillery. Although dying in combat is unlikely in an absolute sense, with fatalities affecting only about 1 in 500 personnel per year even in the riskiest military occupations, it is notable that these risks are five to ten times as high as those in agriculture, the riskiest civilian industry. Combat fatality risk is substantially lower in some military occupations, such as communications, administration, and supply and logistics, at least compared with ground combat personnel. However, risks in these safer military occupations are still on par with somewhat hazardous civilian occupations, such as construction. Overall, these data indicate substantial differences across

occupations in combat death risk and generally higher risk among military personnel relative to civilians. Occupational differences in risk reflect both differences in age, gender, education, and other workforce characteristics across occupations and differences in the environmental conditions and work activities associated with particular occupations.

The variation across occupations in the degree of combat fatality risk raises several questions for compensation policy. Among these are the following:

1. Should compensation factors that vary across occupations, such as enlistment bonuses, take into account differential combat fatality risk? If so, do current compensation programs perform this function adequately?
2. What is the proper role of combat pays versus other mechanisms for providing compensation for fatality risk?

Slide 6



Another important pattern relevant for military compensation policy is the fact that many service members are young at the time of death, and a substantial fraction do not have dependents. The above chart, based on the authors' calculations from army contract data and official casualty statistics published by the Defense Manpower Data Center (Defense Manpower Data Center, 2012), shows that in recent years, combat fatalities have been concentrated among personnel aged 25 and younger. This pattern partly reflects the age distribution of military personnel, which, particularly for the enlisted ranks, skews toward younger workers more than in most private labor forces.

Compensation schemes for other types of fatalities often take into account the age and dependency status of the decedent. For example, in wrongful death lawsuits, damage awards include an economic loss component, and economic loss estimates incorporate information about the age of the victim, since age affects future earnings potential. These awards can also include compensation for loss of consortium (i.e., hardship produced by the absence of a loved one), which is partly a function of the dependency status of the victim. The payment calculations for 9/11 victims who received compensation from the Victims' Compensation Fund took into account age and expected future income (Dixon and Stern, 2004).

There are examples, however, of compensation programs that do not take into account age or number of dependents. Term life insurance policies, for example, pay a fixed amount for the term of the policy that does not vary with the age or family characteristics of the policyholder.

Determining to what extent age and dependency status should factor in the calculation of military death benefits raises delicate questions regarding the proper balancing of the notion that sacrifice of all service members is of equal value with the notion that, to achieve corrective justice, it may be desirable to adjust benefits to reflect differing economic circumstances of those who have died.

Slide 7

Road Map

- Background on combat casualties
- **Current compensation programs**
- Outstanding questions and opportunities for future progress

Slide 8

Some Elements of Military Compensation May Reflect Differential Occupational Risk

- **Basic salary depends on rank/years of service, generally does not vary by occupation**
- **Occupation-specific bonuses paid at enlistment and re-enlistment**
 - **Average bonuses doubled (\$5K to \$10K) since 2001**
- **Small fixed pay increase (\$225/month) for duty in hostile locations**

RAND

A8812d-7 03/10

Compensation schemes for combat fatalities cannot be considered in isolation; rather, these programs operate in concert with a larger system of compensation in the military that includes pay and bonuses as well as an array of in-kind benefits (Asch, Hosek, and Martin, 2002; Murray, 2004). For example, many individuals receive enlistment bonuses when they join the military. While these bonuses exist for a variety of purposes, such as to manage the inflow timing of new service members to match available training capacity, one effect of these bonuses is to provide compensation for differences in desirability across occupational classifications within the military, and combat risk is one dimension of desirability. As another example, there is small pay differential offered to service members deployed to areas involving active combat operations (Office of the Undersecretary of Defense, Personnel and Readiness, undated); such payments provide one means of providing limited compensation for the disadvantages of hostile deployment, which may include separation from family and less hospitable day-to-day working conditions, in addition to combat risk. A key challenge facing policymakers dealing with compensation matters is how to integrate the various forms of available compensation into a coherent package of benefits that promotes national security and other objectives. Changes to one part of the system—for example, increasing combat pay to provide better compensation for an increase in combat risk—may have ancillary spillover effects—for example, inducing more individuals to enlist into particular occupations eligible for combat pay.¹

In thinking about various ways for compensating for the risk of combat death, it is helpful to differentiate two approaches to compensating individuals for risk: *ex ante* and *ex post*. *Ex ante* approaches compensate an individual before the risk is realized. Suppose, for example, that there is a 10-percent chance that a particular job will result in a loss of \$100,000 in any given year. At least as a matter of conventional economic theory, this risk can be compensated for by providing an extra \$10,000 every year ($10\% \times \$100,000 = \$10,000$). Under the pure *ex ante* approach, no extra compensation is provided if the bad outcome is actually realized.

The *ex post* approach compensates only after the risk is realized. Suppose we use the same example of a 10-percent risk of \$100,000 every year. To be compensated on an *ex post* basis, one would receive \$100,000 if the 10-percent risk of a loss of \$100,000 actually came to pass. Tort law generally uses an *ex post* approach to compensation and usually provides compensation only to those who are actually injured by a particular risk. If one adopts the standard assumptions of microeconomic theory of rationality and risk neutrality, an individual would be indifferent to being compensated on an *ex post* or an *ex ante* basis. As a practical matter, it is also possible to provide both *ex ante* and *ex post* compensation for risk, as in the case of a worker who receives a higher wage for participating in a dangerous job assignment but also receives an insurance payment in the event of an injury.

While this framework is useful for thinking about devising compensation systems for risk, there are several important caveats that should be noted. First, *ex post* compensation is only possible if the risk is not fatal. The person's estate and survivors can receive compensation, but the deceased person himself or herself cannot. This distinguishes risk of death from other risks. In this context, it means that true *ex post* compensation for the service member who dies in combat is impossible. We often speak of compensating for the risk of death by making some payment after the death, but, to be more precise, we are providing for the decedent's survivors.

Second, it is clear that not all risks can be compensated for with money. Few people, if any, for example, would be willing to accept a 100-percent chance of horrible disfigurement in exchange for any amount of money. Money and personal injury may be incommensurable in this respect, and some harm may be impossible to remedy. But whether or not the remedial efforts are adequate, they can be provided on either an *ex post* or *ex ante* basis.

¹ Indeed, DoD periodically reviews its compensation policies for coherence and adherence to its national security goals when it conducts a Quadrennial Review of Military Compensation (QRMC).

Slide 9

Ex Ante Compensation for Perils of Combat Can Be Estimated

- **Regressions explain reenlistment**
 - Variables: economy, demographics, bonuses
 - Unexplained declines post 2002 attributable to war*
- **Simulations provide bonus required to maintain current retention levels (compensating variation)**
 - Life value x prob of death = bonus required
 - Life value, net of casualties, is \$2M (based on relative compensation in auto accidents)

* War casualties include 32,000 injuries (20% serious brain or spine)

Category	Retention rate with \$5000 bonus	Bonus required for 60% retention
Actual		
Baseline 2002	60%	\$5,000
Projected		
Combat arms, 2003-2008	38%	\$29,000
Combat support, 2003-2008	53%	\$9,000

RAND A8812d-8 03/10

In all compensation contexts, the question of benefit adequacy is an important one—are compensation levels high enough to be “fair” or “adequate”? Different stakeholders may bring to a particular compensation context differing notions of what constitutes fair or adequate compensation.

One approach that is commonly used to gauge the adequacy of benefits is an actuarial one. Following this approach, if we wished to compensate individuals *ex ante* for combat risk, we could simply assume a value of a life and then calculate the appropriate premiums based on the risk of death for any given group. So, for example, if we assume a value of a life of \$1 million and a risk of death per year of 194 per 100,000 (based on actual death rates for infantry), we can calculate the actuarially “fair” *ex ante* premium as the risk of death multiplied by the value of a life. In our example that is 194 divided by 100,000 multiplied by \$1 million, which equals \$1,940 per year.

Another approach is an economic approach, which attempts to infer the values that soldiers place on combat fatality risk based on observed additional payments that they demand for serving in war zones. This approach has been applied in nonmilitary contexts by examining the wage differentials demanded by workers to engage in various risky occupations and forms the basis of the value of a statistical life (VSL) literature, which is widely referenced in cost-benefit analysis of government regulations

(Viscusi and Aldy, 2003). To our knowledge, there is very little extant research attempting to apply this approach in a way that would be informative for military compensation policy.

To illustrate how this economic approach might work in practice, here we calculate the implied payment that would compensate personnel for the increased risk of combat associated with deployment to Iraq and Afghanistan based on unpublished RAND work performed for the U.S. Army on factors affecting retention.

In this research, the probability of Army first-term reenlistment was linked to a variety of factors, including prevailing labor market conditions, individual characteristics, military occupations, and available retention bonuses. After controlling for these factors, the results indicate that the probability of reenlistment, and therefore overall retention rates, dropped significantly with the onset of hostilities and the increase in casualty rates.

The chart summarizes the results of this analysis for all enlisted personnel, as well as combat arms (e.g., infantry, artillery, armor, aviation) and support (e.g., communications, logistical) occupations. In FY 2002, the benchmark year, average reenlistment bonuses were \$5,000, and the retention rate was 60 percent. Over the entire 2003–2008 period, at this reenlistment bonus level, average retention rates, holding all other factors constant, would have fallen to 38 percent and 53 percent for combat arms and support occupations, respectively.²

Based on these same regressions, it is possible to calculate the increase in the bonus that would have been necessary to maintain the benchmark retention rate of 60 percent. For combat support occupations, an increase of \$4,000 would have been sufficient to maintain retention at the 60-percent level. In contrast, combat arms personnel would have required an increase of \$24,000, for a total of \$29,000. This implied compensation can be viewed as a rough approximation of the perceived risk of death and the required *ex ante* compensation.

We can also calculate the implicit value of a life based on these payments. For example, our calculations from the data referenced in slide 5 indicate that the annual death rate for combat occupations averaged about 170 per 100,000 troops. In contrast, the rate was lower, at 29 per 100,000 soldiers, for support occupations. For an average reenlistment term of 3.5 years, this implies a life valuation of about \$4 million for combat troops. The valuation was almost the same for combat support troops, at \$3.9 million.³

These calculations are by no means comprehensive, but rather are designed to illustrate the economic approach. For example, it is clear that not all of this implied compensation can be attributed to the risk of death. As we have seen, just over 5,000 soldiers have lost their lives. At the same time, over 30,000 enlisted personnel have suffered war-related injuries, about 20 percent of which are quite serious, involving brain and/or spinal injuries. In addition to risk of death or serious injury, there is considerable disutility simply as a result of being deployed to a combat zone. Similarly, differences in bonus effects across occupation categories may partly reflect differences in risk of

death but also incorporate other occupation-specific factors, such as the nature of job tasks and transferability of skills to the civilian market. Accordingly, we must account for these additional factors to the extent we want to calculate the compensation that is attributable to risk of death. This approach also assumes that individual decisions regarding whether to reenlist are based on an accurate assessment of future probabilities of death, when it is possible that enlistees actually overestimate or underestimate the risk of death.

Neither the actuarial nor the economic approach provides an answer to the question of whether benefits levels are appropriate but, rather, provides a starting place for thinking about benefit adequacy. Further research, particularly with regards to developing more refined methods for calculating compensating differentials, as above, might make these types of calculations more informative for military compensation policy.

¹ There is a distinction between the value of a statistical life year, which measures the value of extending life by one year at a particular age, and the value of a statistical life, which can be obtained by summing the value of statistical life years across the range of a typical life span.

² These declines reflect the average for this period as reflected in the coefficients of separate dichotomous variables indicating each year from 2003 to 2008 relative to the 2002 benchmark.

³ The calculation is based on the following relationship: probability of death \times value of life = annual "premium" necessary to compensate for risk of death and/or injury. For combat, $(170/100,000)(\text{value}) = 24,000/3.5$, so value = \$4.0 million. For combat support, the implied value of life is almost identical: $(29/100,000)(\text{value}) = 4,000/3.5$, so value = \$3.9 million.

Slide 10

Ex Post Lump-Sum Benefits Paid to Survivor

- **Death gratuity of \$100,000**
- **Funeral benefits up to \$8800**
- **Servicemembers' Group Life Insurance unless opt-out – up to \$400,000**
- **If death more than seven days after traumatic injury, from \$25,000 to \$100,000 additional under life insurance**

RAND

A8812d-9 03/10

In addition to providing some forms of compensation that are *ex ante* in nature, the military also provides an array of *ex post* benefits to the survivors of individuals killed in combat (Office of the Undersecretary of Defense, Personnel and Readiness, undated). Included among these are benefit programs that provide a single lump-sum payment shortly after the time of death, such as the “death gratuity.” One advantage of single-payment programs is that program administration can in some cases be less complex than programs that provide a continued stream of payments over time, which means that payments can often be processed comparatively quickly. These programs can thus provide beneficiaries with relatively quick access to resources to cover funeral expenses, relocation costs, travel costs, psychological health needs, and other expenses incurred in the immediate aftermath of the death of a family member. The most comparable private-sector counterparts to these programs are term life insurance policies.

Slide 11

Other Benefits Are Paid Over Time

- **Dependency and Indemnity Compensation Program**
 - Paid monthly for life of spouse unless spouse remarries before age 57
 - In 2009, monthly amount was \$1154 plus additional monthly payment of \$286 for each child
 - Non-taxable
- **Survivor benefit plan**
 - Payments equal to 55% of what member's retirement pay would have been if retired fully disabled
 - Payment reduced by whatever is received under Dependency and Indemnity Compensation Program
 - Taxable

RAND

A8812d-10 03/10

However, in addition to making lump-sum payments following a combat death, the Department of Veterans Affairs also provides continuing payments to surviving dependents of service members killed in combat. These benefits are particularly valuable because they can persist for the lifetime of the spouse, are adjusted for inflation, and in some cases receive favorable tax treatment. The two main programs that provide periodic payments are the Dependency and Indemnity Compensation (DIC) program, which provides a basic monthly stipend to beneficiary spouses with add-ons for dependents, and the Survivor Benefit Plan (SBP). The SBP was originally designed as a program for military retirees and existed primarily to allow military retirees to convert single-survivor military retirement benefits into a joint-survivorship structure. However, in 2004 SBP was modified to provide benefits to survivors of fallen service members based on the payment schedules developed for the military disability system (Burrelli and Corwell, 2008).

The simultaneous existence of programs that provide both lump-sum and periodic payments to survivors raises the question of how policymakers should optimally mix up-front and deferred, periodic payments. Because responsibility for the aforementioned programs is split across DoD and the Department of Veterans Affairs, there is no single entity tasked with providing a coordinated view of *ex post* compensation.

Slide 12

Other Survivor Benefits

- **Health**
 - Family receives health care benefits for three years at no charge
 - Entitled to retiree family rate for rest of life
- **Educational**
 - Spouses and children are entitled to educational assistance from VA
- **Housing**
 - Government housing for a year or reimbursement at Basic Allowance for Housing rate
- **Tax**
 - If death in combat zone or from injuries in combat zone, decedent's income liability forgiven for immediate and preceding tax year and taxes refunded
- **Social Security**

RAND

A8812d-11 03/10

In the civilian sector, almost all compensation for accidental or premature death is provided as cash compensation. On a theoretical level, one advantage of providing compensation in cash rather than in-kind is that recipients may not highly value the particular mix of goods and services provided in-kind; if these benefits are unsalable, they may cost more to produce than the value provided to beneficiaries. Cash compensation avoids this problem because it allows beneficiaries to allocate compensation resources to whatever purposes maximize their utility.

Current compensation policy for the military, in contrast, provides a mixture of both cash payments, discussed previously, and in-kind benefits, some of which are listed in this chart (U.S. Army, 2008). As an example, families of individuals who die while on active duty are eligible for coverage under TRICARE, the military health insurance program, for three years following the death of their sponsor. One noneconomic rationale for providing in-kind benefits is to maintain a connection between the survivors of the fallen and the military as a way to honor those who have died. Interestingly, however, many of the in-kind benefits offered by the military, such as housing benefits, are available for only a few years.

The fact that in-kind benefits currently comprise an important component of compensation for combat death raises another important question for policymakers: What is the appropriate mix of cash versus in-kind benefits for the survivors of those who have died in combat?

Slide 13

Other Ex Post Federal Survivor Compensation Programs

- **September 11 Victim Compensation Fund (VCF) after offsets**
 - Average: \$2,082,128
 - Range: \$250,000-\$7,100,000
- **Longshore and Harbor Workers' Compensation Act**
 - 50% of average weekly wage for life or until remarriage
 - Additional 16 2/3% of average weekly wage for each minor child
- **Energy Employees Occupational Illness Compensation Program Act**
 - Lump-sum payment of \$150,000- \$250,000
- **Federal Employees Compensation Act**
 - 50% of deceased employee's salary until death or remarriage
 - Additional 15% for each child to maximum of 75%
- **Black Lung Benefits Act**
 - Benefits are 37.5% of base salary for GS-2 federal employee

RAND A8812d-12 03/10

A variety of other programs exist in the public sector to provide compensation for government employees other than military personnel who die in the course of their official duties (U.S. Department of Labor, undated, 2009a, 2009b, 2009c). As demonstrated on this slide, there is considerable variation in the amount and structure of death benefits across existing government programs. Some of these programs may provide useful lessons for DoD that could inform policy governing compensation for combat death. For example, comparisons between such factors as program administration costs and beneficiary satisfaction for the Federal Employees Compensation Act (FECA) and DoD's DIC program may provide insights into the value of providing payments for dependent children that are equal across all recipients, as is the case under DIC, versus payments that vary with the earnings of the decedent, as is the case under FECA.

Slide 14

Other Compensation Contexts

- **Workers' Compensation**
 - **Varies widely by state – usually a percentage of weekly wages**
- **Tort**
 - **Varies widely**
 - **Compensation vs. deterrence**

RAND

A8812d-13 03/10

Outside of the federal government, there exists yet a further diversity of systems offering compensation to those killed because of accidents or intentional behavior. One of the largest systems for compensating work-related fatalities is the workers' compensation system, an administrative compensation system designed to replace tort and thereby reduce the transaction costs associated with providing payments to survivors of deceased workers. Because workers' compensation programs are administered at the state level, the amount of available compensation for a workplace fatality, as well as eligibility for payments, varies from location to location. Under the tort system administered by the judicial branch, individuals can seek cash compensation through the courts for deaths resulting from other parties' negligence or criminal behavior; a key difference between the tort system and many other compensation schemes is that, for a given fact pattern and set of plaintiff characteristics, the tort system can produce a wide range of outcomes. Both of these systems are overlaid by private insurance systems—such as medical, disability, and life insurance—that are designed to spread risk for payments across many potential payers.

While each of these systems includes features that may potentially provide insights for military compensation policy, there are important differences between systems that must also be considered in any comparative analysis. For example, in other compensation contexts, particularly tort, the issue of who should be compensated is

paramount, whereas in the case of combat deaths, determining who is eligible for compensation is relatively straightforward.

Slide 15

Road Map

- **Background on combat casualties**
- **Current compensation programs**
- **Outstanding questions and opportunities for future progress**

Slide 16

War Deaths Raise Numerous Questions for Compensation Policy (1)

- What is “adequate” compensation?
- To what extent should compensation schedules take into account age, number of dependents, or other factors related to economic loss?
- Should ex ante compensation take into account differential risk of death faced by individuals in certain occupations/military assignments?
- What is the proper balance between ex ante versus ex post compensation?

RAND

A8812d-14 03/10

Slide 17

War Deaths Raise Numerous Questions for Compensation Policy (2)

- Should ex post compensation be provided in lump sums, via periodic payments, or some combination?
- What is the proper role of cash versus in-kind benefits in constructing an overall compensation package?
- How can compensation for loss of life be best integrated with a larger program for compensating servicemembers and their families?
- How should compensation policy account for the effect of combat casualties on recruiting?

RAND

A8812d-14 03/10

To summarize, in this briefing we have provided basic information about the characteristics of military fatalities and discussed existing programs for providing compensation to service members killed in combat and their families. In exploring these data, we have identified a number of important questions—listed in the slide above—that must be confronted by policymakers seeking to administer programs for compensating fallen soldiers and their survivors. We have also briefly described other systems used to compensate for accidental or premature death and provided examples of how these systems address some of the outstanding compensation policy questions raised in our analysis. Our goal is not to endorse one specific approach to compensation but, rather, to highlight the range of issues that confront policymakers in this arena.

Slide 18

Survivor Benefits Can Be Assessed Against a Variety of Criteria

- **Social goals**
 - Provide equitable compensation for decedents and survivors for the economic losses
 - Appropriately recognize the sacrifice of individuals who have died defending their country and their family members
- **National security goals**
 - Recruit and retain high-quality personnel
 - Reinforce military values of solidarity and equality in sacrifice
- **Efficiency goals**
 - Minimize administrative costs
 - Ensure that policymakers properly internalize costs when making military commitments

RAND

A8812d-15 03/10

In addressing these issues, policymakers must recognize that compensation programs exist to serve a range of goals, both social and economic, and in some cases these goals may call for conflicting solutions (McIntyre, 1992; Pilling, 2006). Although any response to the questions we have outlined above can and should be considered in reference to criteria such as those articulated here, the appropriate resolution of outstanding questions related to compensation policy will depend in part on which of the above goals are deemed most important by policymakers and the public.

Slide 19

Opportunities Exist to Improve Fatality Compensation Policy

- **Empirical studies can provide:**
 - **Information about how personnel value combat fatality risk derived from individual responses to changes in ex ante benefits, such as bonuses**
 - **Measurements of economic loss, the amount of compensation provided by current programs, and the cost of these programs**
- **Comparative studies of other compensation systems may furnish insights applicable to DoD and VA programs**

RAND

A8812d-16 03/10

Additional research could be helpful in addressing questions about compensation for military fatalities. Empirical studies can provide policymakers better information about how individuals respond to combat fatality risk, how well the current system compensates economic loss, and how much variability exists in fatality compensation. Even in the case of more subjective issues, such as determining how much compensation is "adequate," empirical analysis can provide important insights, as illustrated by our example showing how data on reenlistment bonuses could be used to draw inferences about how much individual soldiers value combat risk.

Given the wide range of alternative approaches for compensating death that exist in both the public and private spheres, comparative studies that draw lessons for the military from alternative systems also carry potential for informing future policy decisions in this area. In this briefing we have provided a few simple examples to illustrate such applications, but a more thorough, comprehensive comparison awaits further analysis.

References

- Asch, Beth J., James R. Hosek, and Craig W. Martin, *A Look at Cash Compensation for Active-Duty Military Personnel*, Santa Monica, Calif.: RAND Corporation, MR-1492-OSD, 2002. As of January 18, 2012:
http://www.rand.org/pubs/monograph_reports/MR1492.html
- Bureau of Labor Statistics, "Census of Fatal Occupational Injuries (CFOI)—Current and Revised Data," 2010. As of October 21, 2010:
<http://www.bls.gov/iif/oshcfoi1.htm>
- Burrelli, David, and Jennifer Corwell, *Military Death Benefits: Status and Proposals*, Congressional Research Service Report RL32769, 2008.
- Centers for Disease Control and Prevention, "Malignant Mesothelioma Mortality—United States, 1999–2005," *Mortality and Morbidity Weekly Report*, Vol. 58, No. 15, April 2009, pp. 393–396.
- Costa, Dora, "Pensions and Retirement: Evidence from Union Army Veterans," *Quarterly Journal of Economics*, Vol. 110, No. 2., May 1995, pp. 297–319.
- Defense Manpower Data Center, "Military Casualty Information," 2012. As of January 19, 2012:
<http://siadapp.dmdc.osd.mil/personnel/CASUALTY/castop.htm>
- Dixon, Lloyd, and Rachel Kaganoff Stern, *Compensation for Losses from the 9/11 Attacks*, Santa Monica, Calif.: RAND Corporation, MG-264-ICJ, 2004. As of January 18, 2012:
<http://www.rand.org/pubs/monographs/MG264.html>
- Federal Bureau of Investigation, "Uniform Crime Reports," 2009. As of October 21, 2010:
<http://www.fbi.gov/about-us/cjis/ucr/ucr>
- iCasualties.org, "Operation Iraqi Freedom, Afghanistan Coalition Military Fatalities by Year," 2010a. As of October 21, 2010:
<http://icasualties.org/>
- , "Operation Iraqi Freedom, Iraq Coalition Military Fatalities by Year," 2010b. As of October 21, 2010:
<http://icasualties.org/>
- McIntyre, James, *Report of the Seventh Quadrennial Review of Military Compensation*, Washington, D.C.: U.S. Department of Defense, Office of the Assistant Secretary of Defense (Force Management and Personnel), 1992.

- Murray, Carla, *Military Compensation: Balancing Cash and Noncash Benefits*, Washington, D.C: Congressional Budget Office, 2004.
- National Highway Traffic Safety Administration, "Fatality Analysis Reporting System (FARS)," 2010. As of October 21, 2010:
<http://www.nhtsa.gov/FARS>
- National Transportation Safety Board, "Aviation Statistics," undated. As of September 14, 2011:
http://www.nts.gov/data/aviation_stats.html
- Office of the Undersecretary of Defense, Personnel and Readiness, "Benefits," undated. As of September 14, 2011:
<http://militarypay.defense.gov/benefits/index.html>
- Ortiz, Stephen, "Rethinking the Bonus March: Federal Bonus Policy, the Veterans of Foreign Wars, and the Origins of a Protest Movement," *Journal of Policy History*, Vol. 18, 2006, pp. 275–303.
- Pilling, Donald, *The Military Compensation System: Completing the Transition to an All-Volunteer Force*, Arlington, Va.: Defense Advisory Committee on Military Compensation, 2006.
- U.S. Army, "Federal Benefits for Casualties/Survivors," 2008. As of September 14, 2011:
http://myarmybenefits.us.army.mil/Home/Benefit_Library/Federal_Benefits_Page.html
- U.S. Department of Labor, "Office of Workers' Compensation Programs (OWCP): EEOICP Program Statistics," undated. As of September 14, 2010:
<http://www.dol.gov/owcp/energy/regs/compliance/weeklystats.htm>
- , *Injury Compensation for Federal Employees*, Office of Workers' Compensation Programs, Publication CA-810, 2009a.
- , "Health Benefits, Retirement Standards, and Workers' Compensation: Black Lung Compensation," updated September 2009b. As of September 30, 2011:
<http://www.dol.gov/compliance/guide/blklung.htm>
- , "Health Benefits, Retirement Standards, and Workers' Compensation: Longshore and Harbor Workers' Compensation," updated September 2009c. As of September 30, 2011:
<http://www.dol.gov/compliance/guide/longshor.htm>
- Viscusi, W. Kip, and Joseph E. Aldy, "The Value of a Statistical Life: A Critical Review of Market Estimates Throughout the World," *Journal of Risk and Uncertainty*, Vol. 27, No. 1, 2003, pp. 5–76.